IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

ASSISTANT COMMISSIONER FOR PATENTS

Washington, D.C. 20231
Prior Application:

Attorney's Docket Number: 6530.0095-02

Art Unit: 3311

Examiner: S. Gilbert

SIR: This is a request for filing a

[XX] Continuation [ ] Divisional Application under 37 C.F.R. § 1.60 and 37 C.F.R. § 1.53(b)(1) of pending prior application Serial No. 08/458,215 filed June 2, 1995 of Thomas O. BALES et al. for RADIAL JAW BIOPSY FORCEPS

1. [XX] Enclosed is a complete copy of the prior application including the oath or Declaration and drawings, if any, as originally filed. I hereby verify that the attached papers are a true copy of prior application Serial No. 08/458,215 as originally filed on June 2, 1995. This application is being filed without payment of the filing fee.

2. [ ] Cancel Claims _____. (At least one original independent claim must be retained for filing purposes.)

3. [ ] A Preliminary Amendment is enclosed.

4. [XX] The filing fee is calculated on the basis of the claims existing in the prior application as amended at 2 and 3 above.

For	Number Filed	Number Extra	Rate	Basic Fee $770.00
Total Claims	21 -20=	1	x$ 22.00=	$ 22.00
Independent Claims	2 -3=	-----	x$ 80.00=	
Multiple Dependent Claim(s) (if applicable)			+$260.00=	
			Total =	
			Reduction by ½ for filing by small entity	-
			TOTAL FILING FEE =	**792.00**

5. [ ] A check in the amount of $_____ to cover the filing fee is enclosed.

LAW OFFICES
NEGAN, HENDERSON, ARABOW, GARRETT & DUNNER, L.L.P.
300 I STREET, N.W.
SHINGTON, DC 20005
202-408-4000

6. [XX] Amend the specification by inserting before the first line, the sentence:

--This is a [XX] continuation [ ] division of application Serial No. 08/458,215, filed June 2, 1995 which is a continuation of Serial No. 07/837,046 filed February 18, 1992, now U.S. Patent No. 5,507,296, which is a continuation of Serial No. 07/521,766 filed May 10, 1990 now U.S. Patent No. 5,133,727.--

7. [XX] New formal drawings are enclosed.

8. [XX] The prior applications are assigned of record to: Symbiosis Corporation. Copies of two Assignments and their corresponding Notices of Recordation are enclosed.

9. [ ] Priority of application Serial No. _____, filed on _____ in _____ _____ (country) is claimed under 35 U.S.C. § 119. A certified copy

[ ] is enclosed or [ ] is on file in the prior application.

10. [ ] A verified statement claiming small entity status

[ ] is enclosed or [ ] is on file in the prior application.

11. [XX] By the Revocation of Power of Attorney and Power of Attorney dated July 28, 1997, and filed in the prior application on July 30, 1997, the power of attorney in the prior application is to at least the following: Barbara C. McCurdy, Reg. No. 32,120; Doris Johnson Hines, Reg. No. 34,629; and Leslie I. Bookoff, Reg. No. 38,084.

12. [ ] The power appears in the original declaration of the prior application.

13. [XX] Since the power does not appear in the original declaration, a copy of the power in the prior application is enclosed.

14. [XX] Please address all correspondence to FINNEGAN, HENDERSON, FARABOW, GARRETT and DUNNER, L.L.P., 1300 I Street, N.W., Washington, D.C. 20005-3315.

15. [ ] Recognize as associate attorney _____

_____

(name, address & Reg. No.)

LAW OFFICES
NEGAN, HENDERSON,
ARABOW, GARRETT
& DUNNER, L.L.P.
300 I STREET, N.W.
SHINGTON, DC 20005
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16. [ ] Also enclosed is ______________________________
____

PETITION FOR EXTENSION. If any extension of time is necessary for the filing of this application, including any extension in the parent application, serial no. 08/458,215, filed June 2, 1995, for the purpose of maintaining copendency between the parent application and this application, and such extension has not otherwise been requested, such an extension is hereby requested, and the Commissioner is authorized to charge necessary fees for such an extension to our Deposit Account No. 06-0916. A duplicate copy of this paper is enclosed for use in charging the deposit account.

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

By: [signature]
Leslie I. Bookoff
Reg. No. 38,084

Date: September 12, 1997

08/925,547

LAW OFFICES
FINNEGAN, HENDERSON,
FARABOW, GARRETT
& DUNNER, L.L.P.
1300 I STREET, N. W.
WASHINGTON, DC 20005
202-408-4000

RADIAL JAW BIOPSY FORCEPS

This is a continuation of Serial No. 07/521,766.

BACKGROUND OF THE INVENTION

This invention relates to biopsy forceps and more particularly to unique handler actuation wire and homologous jaw construction for those forceps.

A number of different types of biopsy forceps are in common use, typically in conjunction with endoscopic assistance. Ordinarily, these devices are of complicated construction, requiring the manufacturing and machining of precise miniaturized components, which are therefore generally quite expensive.

One early example of flexible forceps is shown in U.S. Patent 3,895,636 (1975) to Schmidt, wherein a pair of cup shaped jaws having an annular rim mate with a hub and a sharpened trocar. The jaws in this embodiment are of a nature which requires machining for the edge, each jaw being different from the other jaw.

U.S. Patent 4,887,612 to Esser et al, shows a similar biopsy forceps which utilizes a cam linkage to effectuate the cup shaped jaws toward and away from one another. The jaws shown in this patent are made from stainless steel and likewise, require expensive machining.

U.S. Patent 4,763,668 to Macek et al, shows a biopsy forceps whose cup shaped forceps are driven by a linkage arrangement. Each pivot point in the linkage establishes a new place for stress, wear and breakage. This is similar to the linkage

DAVID P. GORDON
Patent Attorney
65 Woods End Road, Stamford, Connecticut 06905

assembly shown in U.S. Patent 4,721,116 to Schintgen et al. A needle between the forceps shown in this patent, is retractable as the forceps close.

U.S. Patent 3,921,640 to Freeborn, shows a surgical instrument manufactured from a single piece of molded plastic. The instrument may have any of various forms of jaws including an arrangement of teeth for holding towels or surgical dressing.

U.S. Patent 4,200,111 shows a pair of spring biased jaws which are slidably disposed within the end of a trocar. The jaws are moved inwardly and outwardly from the trocar by movement from a twisted wire.

U.S. Patent 4,669,471 to Hayashi, shows a biopsy forceps device having a pair of cups attached by a pivot pin, with several linkages between the cups and the operating wire, which are likewise, connected by pivot pins, the pins being welded or fused to their components by the use of laser welding.

U.S. Patent 4,815,460 to Porat et al, shows a medical device for gripping, having a pair of jaws which are identical to one another. The jaws have an array of teeth disposed completely thereacross. The teeth are divided longitudinally across each jaw and are out of phase from one another by a half a pitch. The instrument is utilized for gripping purposes. A further device is shown in U.S. Patent 825,829 to Heath. This appliance utilizes two different sets of engaging jaws to accomplish its cutting purpose.

It is an object of the present invention to provide a forceps device which overcomes the disadvantages of the prior art.

DAVID P. GORDON
Patent Attorney
(203) 348-2990
65 Woods End Road, Stamford, Connecticut 06905

It is a further object of the present invention to provide a cutting device having a pair of jaws, wherein each jaw may be a duplicate of its opposing jaw.

It is yet a further object of the present invention to provide a cutting device which is self-aligning which permits greater tolerance in the dimensions of the components in their manufacture.

SUMMARY OF THE INVENTION

The present invention comprises an improvement in biopsy forceps wherein a pair of jaws are formed from a casting. Each jaw of the pair of jaws of the biopsy forceps may be a duplicate of the other jaw. Each jaw is somewhat hemispherically shaped having an elongated portion which extends proximally into a cutter tang. Each cutter jaw has a generally U-shaped distalmost end on which is defined a plurality of radially disposed teeth. The teeth on one side of the longitudinal centerline of the jaw are displaced by one-half pitch from the corresponding teeth on the other side of the longitudinal centerline on that jaw. The displacement by one-half pitch of the teeth on one side of the jaw relative to those corresponding teeth on the other longitudinal side of the jaw permits the same casting to be used for both the upper and lower jaws. The radially disposed array of teeth on each of the jaws permits a self-aligning feature therewith, thus compensating for the slightly looser tolerances found in the casting manufacturing technique.

Each jaw extends proximally and terminates in a tang, as aforementioned. Each tang is arranged so as to receive a joggled pull wire therethrough. Each jaw is mated with one another about

DAVID P. GORDON
Patent Attorney
65 Woods End Road, Stamford, Connecticut 06905

a clevis pin which is cast unitarily with a clevis. The clevis extends into a housing which is crimped to a main coil, the proximal end of which extends into a handle having means for articulating the jaws. Each joggled pullwire from the tang on the proximal end of each jaw flexibly extends through the main coil and into the hub of the handle at the proximal end of the forceps assembly.

The handle comprises a central shaft about which a displaceable spool is disposed. The central shaft has a longitudinally directed stepped diameter bore extending therein on its distal end, and a thumb ring on its proximalmost end. The proximal end of the coil extends into the bore on the proximal end of the central shaft. The bore in the central shaft of the handle has a stepped configuration. The distal end of the bore having a slightly larger diameter than the second or intermediate bore, or the third or proximal end of the bore in the central shaft. A locking coil is arranged to mate within the stepped large outer diameter (distal end) of the central shaft. The locking coil has an inner diameter which is slightly smaller than the outer diameter of the main coil extending from the cutter jaw assembly to the handle. The main coil is screwed into the locking coil disposed within the central shaft. A sheath which acts as a strain relief, is disposed distally of the locking coil about the main coil within the central shaft. The sheath holds the locking coil within the first stepped bore in the central shaft. The strain relief is bonded to the bore of the central shaft. The proximalmost end of the joggled pull wires extend through the proximal end of the main coil and into a thin anti-kink tube in the narrowest third stepped bore in the central shaft. The cross pin fits through a slot at the midpoint of the central shaft. The slot is in communication with the third bore therein. A cross pin

mates with the slot across the central shaft. The proximalmost end of the joggled pull wires are locked into an opening in the cross pin. The ends of the cross pin mate with slots in the spool so as to facilitate corresponding motion in the joggled pull wires.

Proximal movement of the spool with respect to the central shaft effectuates a pull on the joggled pull wires so as to create a pivotable motion of the tangs on the proximal end of the cutters, to cause the cutter jaws to engage to one another.

Movement of the spool distally with respect to the central shaft effectuates a compression on the pull wire thus causing arcuate movement of the tangs on the proximal end of each jaw to force a pivoting motion about the clevis pin thus opening the respective jaws.

BRIEF DESCRIPTION OF THE DRAWINGS

The objects and advantages of the present invention will become more apparent when viewed in conjunction with the following drawings, in which:

Figure 1 is a side elevational view in section, of a biopsy forceps assembly;

Figure 2 is a side elevational view of the distalmost end of a biopsy forceps assembly with a needle, with its cutter jaws being opened;

Figure 3 is a plan view, partly in section, of the distal end of a biopsy forceps without a needle;

Figure 4 is a side elevational view partly in section of the biopsy forceps shown in Figure 3 with its jaws opened;

Figure 5 is a plan view, partly in section, of the distal end of a biopsy forceps assembly, with a needle;

Figure 6 is a side elevational view partly in section, of the biopsy forceps shown in Figure 5; and

Figure 7 is a side elevational view in section, showing part of the handle at the proximalmost end of a biopsy forceps assembly.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings in detail and particularly to Figure 1, there is shown a biopsy forceps assembly 10, having a distal end 12, comprising a jaw assembly 14, and a proximal end 16 comprising a handle 17, spool 19 and thumb ring 21 for manipulation of the assembly. The jaw assembly 14 comprises a pair of jaws 18, each of which is a duplicate of the other. Each jaw 18 as may be seen in Figs. 2 and 3, is a generally elongated somewhat hemispherically shaped structure having a distalmost end and a proximalmost end. Each jaw 18 has on its distalmost end, an array of teeth 20 generally radially directed about a point "R", as exemplified in Fig. 3. Each jaw 18 has a generally longitudinal centerline as may be seen in Figs. 3 and 5. The teeth 20 on one side of the longitudinal centerline of each jaw 18 being displaced by one half pitch from the corresponding teeth 20 on the other side of the longitudinal centerline on that jaw 18. The displacement by one half pitch by the teeth on one side of the jaw 18 is relative to those corresponding teeth 20 on the other

DAVID P. GORDON
Patent Attorney
65 Woods End Road, Stamford, Connecticut 06905

longitudinal side of the jaw 18 permits the same casting to be used for both the upper and lower jaws of the jaw assembly 14. The radial arrangement of the teeth 20 as best seen in Figs. 3 and 5 require each jaw 18 when they close onto one another to automatically mate and effectuate proper alignment therebetween. The self-alignment permits each jaw 18 to be manufactured by an investment casting technique which is inheritantly less expensive than the typical prior art jaws which are machined and which distalmost teeth are either non-existant or they are transverse to the longitudinal centerline the jaws, which jaws inheritantly fail to have any positive cutting edge at their distalmost ends. The casting of each jaw 18 also permits a looser tolerance therebetween which is characteristic of the casting manufacturing technique without any loss in effectiveness of those jaws.

Each jaw 18 has a proximalmost end which comprises a tang 24. Each tang 24 has a generally semicircular recess position 26 on its outer side thereof. The recessed portion 26 may be seen most clearly in Figs. 3 and 5, and then a side view in Figs. 2, 4 and 6. A bore 30 extends transversely through the midpoint between the distal and proximalmost ends of each jaw 18. Each jaw 18 is mated with one another and so as to each be levered about a clevis pin 28 which extends through the bore 30 on each respective jaw 18. Each jaw 18 has an annular boss 33 disposed about the outer face of its bore 30, as shown in Figs. 3 and 5. The boss 33 acts as a bearing surface to reduce the typical friction found on prior art forceps. The clevis pin 28 is received in a hole 32 in clevis 34 as shown in Figs. 3 and 5. The clevis 34 extends proximally, as shown in Figs. 2 - 6, into a hub 40. The clevis 34, the housing 40 and clevis pin 28 are made from a common casting. The clevis pin 28 unitarily extending from one of the sidearms 29 Of the clevis 34.

DAVID P. GORDON
Patent Attorney
65 Woods End Road, Stamford, Connecticut 06905

A main tubular coil 50 shown in Fig. 2 at its distal end thereof, has a portion of it periphery ground flat, as at 52. The flattened distal periphery of the main coil 50 permits a more solid anchoring between the inside of the hub 40 and the distal end of the main coil 50 when the two are crimped together, obviating the need for adhesives, soldering or welding.

An FEP sheath 54 extends from the distal end of the main coil 50 therethrough into the central shaft 56 of the handle 17 as shown in Figs. 2 and 7. This sheath 54 acts as a bearing between a pair of pull wires 60 and the lumen of the main coil 50.

The distalmost end of each pull wire 60 has a Z-bend therein. the Z-bend of each pull wire 60 has a first portion 62 which is rotatably disposed in the recess 26 in the tang 24 of each cutter jaw 18. The Z-bend has a second portion 64 which extends through a bore 66 in the proximalmost end of the tang 24, as best shown in Figs. 3 and 5. A ninety degree bend 68 between the second portion 64 and the main pull wire 60 eliminates the pinching common to prior art loop design wires. Each pull wire 60 has a reflex curve 70 as shown in Fig. 2 as well as in Figs. 6 and 7, extending between their distalmost ends and the distalmost end of the main coil 50. The reflex curve 70 helps to open the cutter jaws 18 when the spool 19 on the handle 17 is displaced distally thereto.

Figs. 2, 5 and 6 shows the distal end of the biopsy forceps assembly 10 with a flat needle 80 disposed between the two cutter jaws 18. The needle 80 has a pointed distalmost end 82 that terminates just within the cutter jaws 18 when closed, and has tail 84 comprising its proximalmost end which extends within the distalmost end of the main coil 50. The needle 80 has a central opening through which the clevis pin 28 may extend as shown in

DAVID P. GORDON
Patent Attorney
65 Woods End Road, Stamford, Connecticut 06905

Figs. 3 and 5. The needle 80 is flat, and as such may be disposed between the two tangs 24 of each cutter jaw 18 as shown in Fig. 5. In cutter jaw assembly 14 without the needle therein, a washer 90 is disposed between the two cutter jaws 18 on the clevis pin 28.

The proximal end of the main coil 50 and the proximal end of the pull wires 60 extend into handle 17 at the proximal end 16 of the biopsy forceps assembly 10. The handle 17 comprises a central shaft about which a displaceable spool 19 is disposed. The central shaft has a longitudinally directed stepped diameter bore 92 extending therein, as shown in Figs. 1 and 7. The proximal end of the main coil 50 extends into the bore 92 on the proximal end of the central shaft. The bore 92 extending into the central shaft has a three stepped configuration. The bore 92 on the distalmost end of the central shaft has a large first diameter 94 as shown in Fig. 7 which steps to a smaller second diameter 96 which subsequently steps down to a smaller yet third diameter bore 98. A locking coil 100 is disposed against the first largest diameter bore 94 in the central shaft. The main coil 50 has an outer diameter slightly larger than the inner diameter of the locking coil 100 and is threadedly received therethrough. The main coil 50 thus extends to and abuts the handle 17 adjacent the second stepped bore 96 of the bore 92 in the central shaft. The pull wires 60 disposed through the inner lumen of the main coil extend therethrough and into the smallest portion 98 of the bore 92 in the central shaft. A strain relief sheath 102 is disposed distally to the locking coil about the main coil 50 within the largest bore 94 in the central shaft. The strain relief sheath 102 extends slightly distally of the distalmost end of the central shaft, and is bonded to the inner walls of the largest bore 94 by a solvent which is directed thereto through a hole 104, as shown in Fig. 7. The strain relief sheath 102 limits twist and movement

of the main coil 50 with the bore 94 while preventing a sharp bend of the coil 50 at the distal end of the handle 17. The proximalmost end of the pull wires 60 extend through the proximal end of the main coil 50 as aforementioned and through and anti-kinking tube 109, and are locked into a cross pin 110, as shown in Fig. 1, which cross pin 110 mates with a slot 112 disposed across the central shaft of the handle 17. The slot 112 is in communication with the axial bore 92 in the central shaft. The proximalmost end of the pull wires 60 are locked into the cross pin 110 by a set screw 114 as shown in Fig. 1. The ends of the cross pins 110 mate with a slot 116 in the spool so as to lock the cross pin 110 therewith. Movement of the spool 19 which is disposed about the central shaft thereby effectuates movement of the puller wires 60 disposed within the main coil 50, the distal ends of which are attached to the tangs 24 on the cutter jaws 18 as shown in Figs. 1 and 2.

Thus there has been shown a biopsy forceps assembly which can be made in a very cost effective manner for an improved biopsy sample. The cutter jaws and clevis support of the biopsy forceps each being made of a cast material permitting a far less expensive manufacture because of its simplicity permitting one jaw design and its self-aligning radially directed distal jaw teeth effectuating its cutting effectiveness as well as its ease of assembly. The pull wire arrangement with each particular jaw eliminates the prior art multiple linkages which have frictional problems and potential for breakage therewith. The spool design for the grasping of the pull wires in regard to the handle therewithin facilitates a one-handed operation thus permitting the physician use of his other hand for other purposes.

We claim:

1. A biopsy forceps device for the taking of biological tissue samples from a body, comprising:

a) a flexible main coil having distal and proximal ends;

b) articulable opposed first and second jaws hingedly disposed on said distal end of said main coil; and

c) actuation means having a distal end coupled to said first and second jaws, said actuation means for effecting articulation of at least one of said first and second opposed jaws, wherein

each said opposed first and second jaws is substantially hollow to permit the taking of biological tissue samples, and each said opposed first and second jaws has a distal portion having a substantially semicircular rim, said substantially semicircular rim having a radial array of substantially triangular teeth extending regularly therefrom, wherein said radial array of substantially triangular teeth of said opposed first jaw extend toward said radial array of substantially triangular teeth of said opposed second jaw and said substantially triangular teeth of said opposed first jaw closely mesh with said triangular teeth of said opposed second jaw when said opposed first and second jaws are in a closed position.

2. A biopsy forceps device according to claim 1, wherein:

said opposed first and second jaws are identical.

3. A biopsy forceps device according to claim 2, wherein:

said first and second jaws each have a longitudinal centerline, and for each jaw, said substantially triangular teeth on a first side of said longitudinal centerline are displaced by one half pitch from corresponding teeth on a second side of said longitudinal centerline.

DAVID P. GORDON
Patent Attorney
65 Woods End Road, Stamford, Connecticut 06905

4. A biopsy forceps device according to claim 1, wherein:

said opposed first and second jaws further comprise a generally rear portion having a parallel line rim extending from said semicircular rim, said parallel line rim having a second array of substantially triangular teeth extending therefrom, wherein said second array of substantially triangular teeth of said opposed first jaw extend toward said second array of substantially triangular teeth of said opposed second jaw.

5. A biopsy forceps device according to claim 4, wherein:

said opposed first and second jaws are identical.

6. A biopsy forceps device according to claim 5, wherein:

said first and second jaws each have a longitudinal centerline, and for each jaw, said substantially triangular teeth of said first and second arrays on a first side of said longitudinal centerline are displaced by one half pitch from corresponding teeth of said first and second arrays on a second side of said longitudinal centerline.

7. A biopsy forceps device according to claim 6, wherein:

each of said opposed first and second jaws has a proximal end portion comprising a tang, with each tang having a recess thereon which articulably receives said distal end of said actuation means.

8. A biopsy forceps device according to claim 3, further comprising:

d) a handle means disposed on said proximal end of said main coil.

DAVID P. GORDON
Patent Attorney
65 Woods End Road, Stamford, Connecticut 06905

9. A biopsy forceps device according to claim 8, wherein:

said actuation means has a proximal end, and

said handle means comprises

a central shaft having a longitudinal bore which receives said proximal end of said actuation means,

a spool having a central opening which receives said central shaft, and

a cross pin in said spool which engages said actuation means therein.

10. A biopsy forceps device according to claim 9, wherein:

said central shaft has a longitudinal bore of stepped configuration which lockably receives said actuation means in said main coil, and

said handle means further comprises a securement means about said main coil, said securement means comprising a locking means which locks said main coil in said stepped longitudinal bore.

11. A biopsy forceps device according to claim 10, wherein:

said locking means comprises a locking coil, and

said main coil is threadedly received in said locking coil in said longitudinal bore in said central shaft.

DAVID P. GORDON
Patent Attorney
65 Woods End Road, Stamford, Connecticut 06905

12. A biopsy forceps device according to claim 6, wherein said actuation means has a proximal end, said biopsy forceps device further comprising:

d) a handle means disposed on said proximal end of said main coil, said handle means comprising

a central shaft having a longitudinal bore which receives said proximal end of said actuation means,

a spool having a central opening which receives said central shaft, and

a cross pin in said spool which engages said actuation means therein.

13. A biopsy forceps device according to claim 12, wherein:

said central shaft has a longitudinal bore of stepped configuration which lockably receives said actuation means in said main coil,

said handle means further comprises a securement means about said main coil, said securement means comprising a locking coil which locks said main coil in said stepped longitudinal bore, and

said main coil is threadedly received in said locking coil in said longitudinal bore in said central shaft.

14. A biopsy forceps device according to claim 3, further comprising:

d) a handle means disposed on said proximal end of said main coil; and

e) a clevis means having distal and proximal ends, and having a pivot means in its distal end, said opposed first and second jaws being coupled to said pivot means and pivoting thereabout, and said proximal end of said clevis means being coupled to said distal end of said main coil.

15. A biopsy forceps device according to claim 14, wherein:

said actuation means comprises a first and second pull wires disposed in said main coil, said first and second pull wires having proximal and distal ends, with said proximal ends of said first and second pull wires coupled to said handle means, and with said distal ends of said first and second pull wires respectively coupled to said opposed first and second jaws.

16. A biopsy forceps device according to claim 7, further comprising:

d) a handle means disposed on said proximal end of said main coil; and

e) a clevis means having distal and proximal ends, and having a pivot means in its distal end, said opposed first and second jaws being coupled to said pivot means and pivoting thereabout, and said proximal end of said clevis means being coupled to said distal end of said main coil.

17. A biopsy forceps device according to claim 16, wherein:

said actuation means comprises a first and second pull wires disposed in said main coil, said first and second pull wires having proximal and distal ends, with said proximal ends of said first and second pull wires coupled to said handle means, and with said distal ends of said first and second pull wires respectively coupled to said tang recess of said opposed first and second jaws.

18. A biopsy forceps device according to claim 3, wherein:

said opposed first and second jaws are formed of an investment cast material.

DAVID P. GORDON
Patent Attorney
65 Woods End Road, Stamford, Connecticut 06905

19. A biopsy forceps device according to claim 6, wherein:

said opposed first and second jaws are formed of an investment cast material.

20. A biopsy forceps device according to claim 7, wherein:

said opposed first and second jaws are formed of an investment cast material.

21. A medical instrument for insertion into a body comprising:

a) opposed first and second end effectors, at least one of said first and second end effectors rotating around a first axis;

b) actuation means for effecting rotation of said at least one of said first and second effectors which rotates around said first axis, said actuation means having a wire means and a handle means, said wire means having a distal end coupled to at least said rotating end effector and a proximal end coupled to said handle means, said handle means for effecting movement of said wire means and thereby effecting rotation of said rotating end effector means,

wherein said opposed first and second end effectors are cast elements which are manufactured by casting.

DAVID P. GORDON
Patent Attorney
65 Woods End Road, Stamford, Connecticut 06905

ABSTRACT OF THE DISCLOSURE

A biological forceps device for the taking of tissue samples from a body, comprising a flexible main coil attached at its distal end to a pair of homologous cast jaws. The jaws have radially arranged teeth on their distalmost end. The jaws are opened and closed by attachment to a pair of pull wires which extend through the main coil, into a handle at its proximal end. the handle has a spool which slides about a central shaft attached to the main coil. The spool is attached to the pull wires, so that movement of the spool with respect to the central shaft, effectuates a force on the proximal ends of the levered jaws, to open and close them, appropriately.

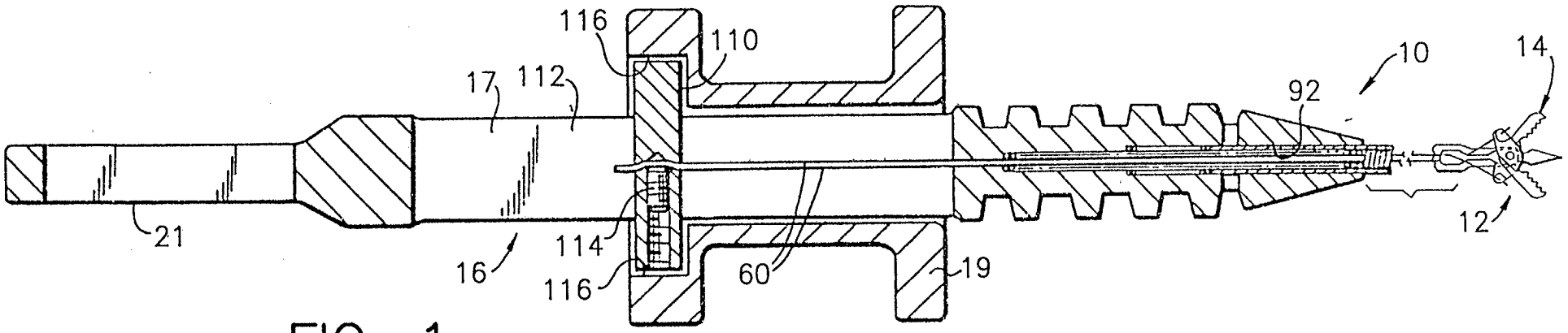


FIG. 1

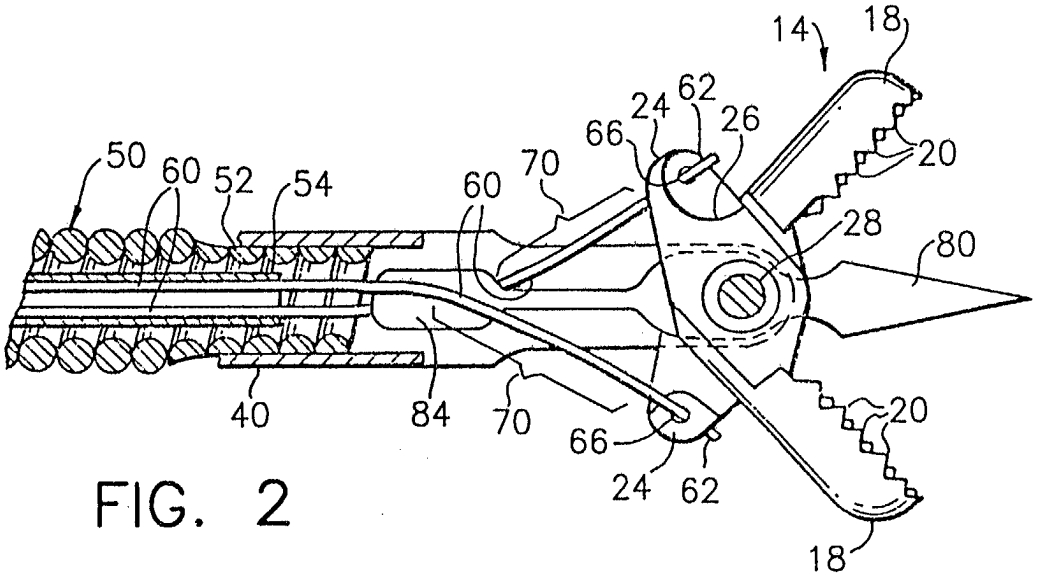


FIG. 2

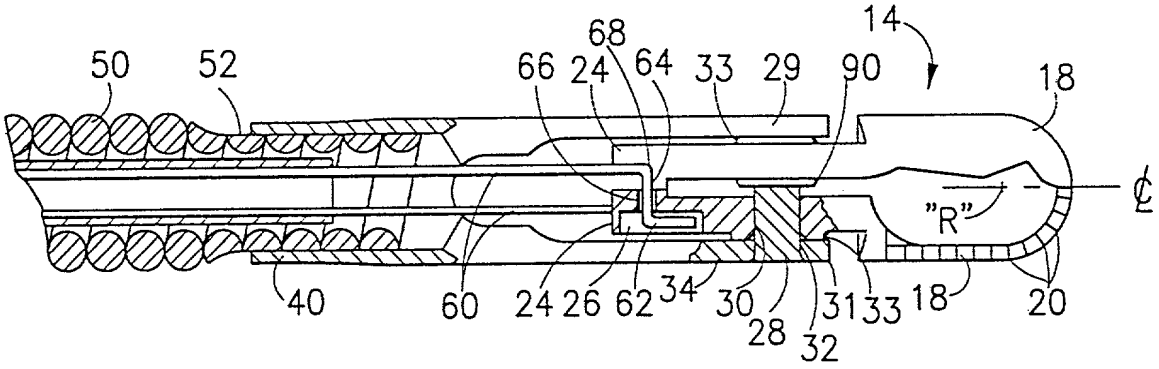


FIG. 3

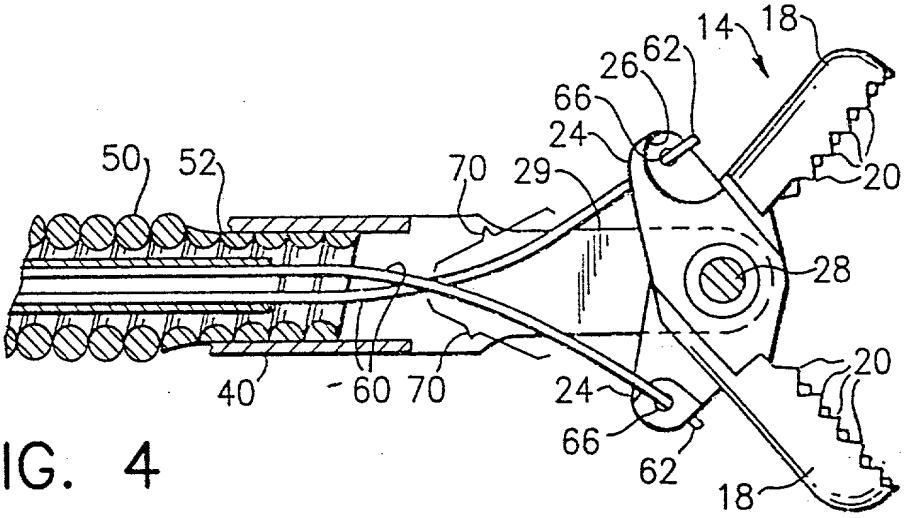


FIG. 4

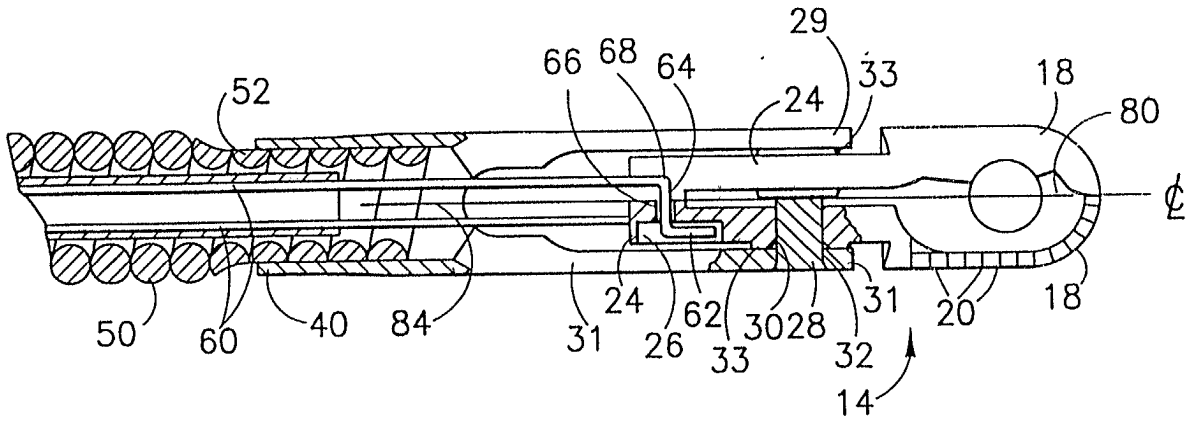


FIG. 5

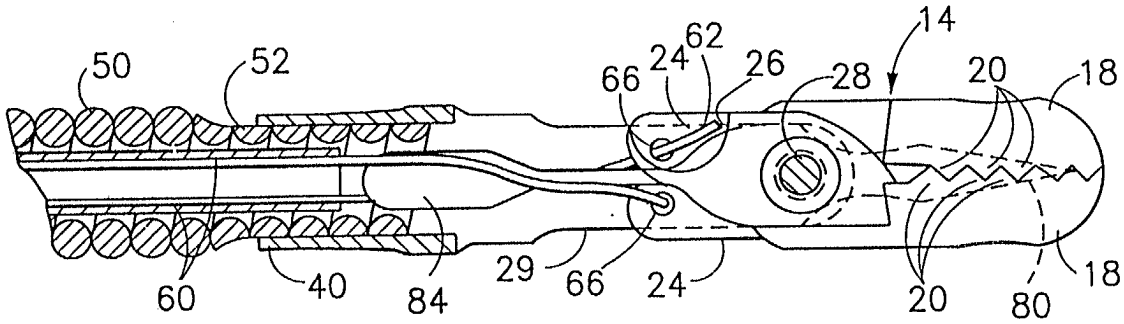


FIG. 6

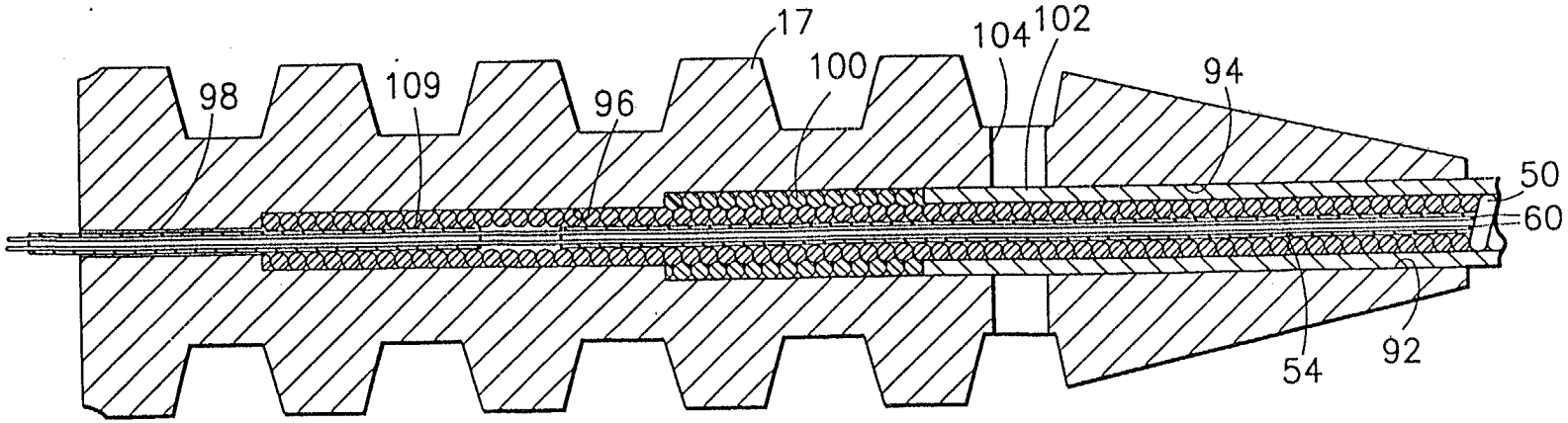


FIG. 7

Docket No. SYM-013

DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY

As below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name, and

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed for and for which a patent is sought on the invention entitled

RADIAL JAW BIOPSY FORCEPS

the specification of which

[X] is attached hereto.

[ ] was filed on _____

as application Serial Number _____

and was amended on (if applicable) _____

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by an amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56(a).

I verify that I am qualified as an independent inventor under Title 37, Code of Federal Regulations, Section 1.9(c), and my obligation to assign rights to this invention, if any, is to a qualified small business concern under Title 37, Code of Federal Regulations, Section 1.9(d).

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)		Priority Claimed	
_____ (Number)	_____ (Country)	__/__/___ D/M/YR FILED	[ ] YES [ ] NO
_____ (Number)	_____ (Country)	__/__/___ D/M/YR FILED	[ ] YES [ ] NO

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose

aterial information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

07/521,766	May 10, 1990	Pending
(Application Ser. No)	(Filing Date)	(Status-Patented, pending, abandoned)
(Application Ser. No)	(Filing Date)	(Status-Patented, pending, abandoned)
(Application Ser. No)	(Filing Date)	(Status-Patented, pending, abandoned)

As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

David P. Gordon (29,996)

Address all telephone calls to David P. Gordon at (203) 329-1160
Address all correspondence to David P. Gordon, Esq.
65 Woods End Road
Stamford, Connecticut 06905
U.S.A.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SOLE OR FIRST INVENTOR

Signature  Date 2-12-92

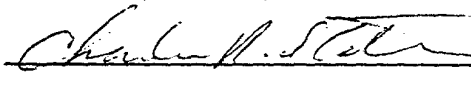
Full Name Thomas O. Bales

Residence 430 Loretto Avenue, Coral Gables, FL 33146

Citizenship U.S.A.

P.O. Address same as residence

SECOND JOINT INVENTOR (IF ANY)

Signature  Date 2-12-92

Full Name Charles R. Slater

Residence 1705 S.W. 4th Street, Fort Lauderdale, FL 33312

Citizenship U.S.A.

P.O. Address same as residence

THIRD JOINT INVENTOR (IF ANY)

Signature _____ Date 2-12-92

Full Name Kevin W. Smith

Residence 8940 S.W. 4th Street, Miami, FL 33176

Citizenship U.S.A.

P.O. Address same as residence

UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Thomas O. Bales et al.

SERIAL NO.: 08/458,215 GROUP ART UNIT: 3311

FILED: June 2, 1995 EXPECTED EXAMINER: S. Gilbert

FOR: Radial Jaw Biopsy Forceps ATTY DOCKET: SYM-013-C1

Honorable Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Sir:

REVOCATION OF POWER OF ATTORNEY

The undersigned, a representative authorized to sign on behalf of the assignee owning all of the interest in this application, hereby revokes all powers of attorney or authorization of agent granted in this application before the date of execution hereof. The undersigned verifies that Symbiosis Corporation is the assignee of the entire right, title, and interest in the patent application identified above by virtue of an assignment from the inventor recorded in the U.S. Patent and Trademark Office at **Reel 6046, Frame 0558.** The undersigned certifies that the evidentiary documents have been reviewed and to the best of the undersigned's knowledge and belief, title is in the assignee Symbiosis Corporation.

POWER OF ATTORNEY

Assignee, through its representative below, hereby appoints the following attorney(s) and/or agent(s) as attorney, with full power of substitution and revocation, to prosecute this application and to transact all business in connection therewith:

Barbara C. McCurdy (32,120)
Robert E. Atkinson (36,433)
Luke R. Dohmen (36,783)
David Cavanaugh (36,476)
Doris Johnson Hines (34,629)
Peter J. Gafner (36,517)
John A. Rissman (33,764)
Patricia LaMarche (37,866)
Leslie I. Bookoff (38,084)

Address all correspondence to:

Barbara C. McCurdy
Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P.
1300 I Street, N.W. Suite 700
Washington, DC 20005-3315
202-408-4000 (phone) 202-408-4400 (fax)

Date: 7/28/97

Name: LAWRENCE J. KNOPF

Title: SECRETARY

Symbiosis Corporation